

CLAIMS

WHAT IS CLAIMED IS:

1. A shelving system comprising:
a panel having a plurality of support structures;
one or more posts configured to support the panel;
each support structure including a pair of opposing beam members having an upper end, a lower end, and an intermediate wall coupling the upper and lower ends;
wherein upper and lower ends of opposing beam members define a plurality of orifices, and a terminal end of the upper end includes a downward projection configured to provide strength and rigidity to the panel.
2. The shelving system of Claim 1 wherein the intermediate wall is generally vertical and approximately perpendicular to the support surface.
3. The shelving system of Claim 1 wherein the intermediate wall is generally angled relative to the support surface.
4. The shelving system of Claim 1, wherein the projection is configured to provide a smoother surface without additional finishing operations after the panel is molded.
5. The shelving system of Claim 4 wherein the beam members from adjacent support structures form alternating "Z"-shaped members across the width of the support structure and form a continuous support along the length of the support structure.

6. The shelving system of Claim 1 wherein the upper ends and lower ends have an increased amount of material compared to the intermediate wall.

7. The shelving system of Claim 6 wherein the upper ends and lower ends have 50% larger wall thickness than the intermediate wall, and extend out from intermediate wall by approximately 100% of the wall thickness.

8. The shelving system of Claim 1 wherein the height of the intermediate wall varies depending on its proximity to the ends of the support structure.

9. The shelving system of Claim 1 wherein the beam members have a curvilinear parabolic shape with a vertex approximately in the middle of the beam members.

10. The shelving system of Claim 9 wherein the plurality of support structures include inner support structures and outer support structures, wherein the outer support structures have a continuous height, and inner support structures have a curved configuration.

11. A shelving system comprising:

a panel including a plurality of support structures;

a plurality of posts configured to support the panel;

each support structure including a set of alternating opposed cavities

defined by a pair of side walls, an upper wall, and a lower wall;

wherein a first cavity is defined by the side walls and the upper wall, and a

second cavity adjacent the first wall is defined by the side walls and the lower wall.

12. The shelving system of Claim 11 wherein the upper wall includes a first

aperture, the lower wall includes a second aperture, and wherein second aperture is

larger than first aperture to maximize the support surface and minimize weight and

material without reducing flexural strength.

13. The support structure of Claim 11 wherein the panel includes three

support structures disposed across the width of the panel.

14. The support structure of Claim 11 wherein the support structures have a

constant height across the length of the panel.

15. The support structure of Claim 11 wherein the height varies so that it has

a reduced height near an outer portion and an increased height near an inner portion of

the support structure.

16. A shelving system comprising:

one or more panels;

a plurality of posts configured to engage sockets in the panels to support the one or more panels;

wherein each of the one or more panels includes:

a set of first support structures including a pair of side walls, an upper wall, and a lower wall defining alternating oppositely disposed cavities;

a set of second support structures including opposing beam members having an upper end, a lower end, and an intermediate wall coupling upper and lower ends;

wherein the first and second support structures are combined to provide particular strength and rigidity characteristics.

17. The shelving system of Claim 16 wherein the intermediate walls and the side walls are configured to terminate at the sockets.

18. The shelving system of Claim 17 wherein the set of first support structures are Z-shaped beams and the set of second support structures are box beams.

19. The shelving system of Claim 16 wherein the height of the intermediate wall varies depending on its proximity to the ends of the support structures.

20. The shelving system of Claim 16 wherein the first and second support structures have a curvilinear parabolic shape with a vertex approximately in the middle of the support structures.

21. The shelving system of Claim 16 wherein the spaced across the width of the panels, and first set of support structures are located towards the outer portion of the panel and the second set of support structures are located toward the interior of the panel.

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